EMERGENCY

1. DESCRIPTION

A. Emergency Locator Transmitter (ELT)

This airplane is equipped with a self-contained ELT. The ELT transmitter is installed immediately behind the aft cabin bulkhead. The ELT is mounted slightly to the right of the airplane centerline. The transmitter and antenna are accessible through an access panel at the base of the baggage compartment bulkhead. Two different ELT models are available on the airplane. The standard ACK E-01 ELT and the optional Artex ME406 ELT.

Serials 0002 & subs w/ ACK E-01 ELT: The transmitter unit is mounted longitudinally in the airplane in order to detect deceleration greater than 3.5 feet per second. If rapid deceleration is detected, the transmitter will repeatedly transmit VHF band audio sweeps at 121.5 Mhz and 243.0 Mhz approximately 0.5 seconds apart. The transmitter is automatically activated upon sensing a change of velocity along its longitudinal axis, exceeding 3 to 5 feet per second. The transmitter can be removed from the airplane and used as a personal locating device if it is necessary to leave the airplane after an accident.

The main transmitter control switch is labeled ON-OFF-ARMED. The transmitter is in the armed position for normal operations. Eight dated “D” cell alkaline batteries contained within the transmitter unit provide power to the transmitter. Replace all ELT batteries at the same time and with the same expiration date stamp. The expiration date of the batteries must be indicated on the outside of the ELT battery case and recorded in the aircraft logs.

The ELT Remote Switch and Control Panel Indicator (RCPI) is located below the circuit breakers on the circuit breaker panel. The RCPI provides test and monitoring functions for the transmitter. The panel contains a button labeled ON, a button labeled RESET, and a red LED indicator light. The ON button is used to test the unit in accordance with the manufacturer’s approved Instructions For Continued Airworthiness and/or other service instructions. The RESET button can be used to cancel an inadvertent transmission. The red light flashes when the ELT is transmitting. A Duracell PX28L or Kodak K28L 6-volt lithium battery mounted in the panel powers the LED.

WARNING: The ACK E-01 ELT is designed to use only Duracell MN1300 or PC 1300 alkaline batteries which are dated by the manufacturer. This ELT does not meet the requirements of TSO-91a or 14 CFR 91.207 if used with any other type of battery. ELT and RCPI batteries must be inspected in accordance with the requirements of the replacement schedule in Chapter 5. The ELT and RCPI batteries must be replaced upon reaching the date stamped on the batteries or whenever the batteries have been in use for one cumulative hour.

Refer to the manufacturer’s approved Instructions For Continued Airworthiness and/or other service instructions.

Serials 1863 & subs w/ Artex ME406 ELT: The transmitter unit is mounted longitudinally in the airplane in order to detect deceleration greater than 4.5 ± 0.5 feet per second. If rapid deceleration is detected, the transmitter will repeatedly transmit VHF band audio sweeps at 121.5 Mhz until battery power is gone. In addition, for the first 24 hours of operation, a 406 MHz signal is transmitted at 50-second intervals. This transmission lasts 440 ms and contains identification data programmed into the beacon and is received by Cospas-Sarsat satellites. The transmitted data is referenced in a database (maintained by the national authority responsible for ELT registration) and used to identify the beacon and owner. The transmitter is automatically activated upon sensing a change of velocity along its longitudinal axis, exceeding 4 to 5 feet per second. The transmitter can be removed from the airplane and used as a personal locating device if it is necessary to leave the airplane after an accident.

The main transmitter control switch is labeled ON-ARM. The transmitter is in the armed position for normal operations. A red LED indicator light flashes when the ELT is transmitting. A battery pack consisting of two “D” cell lithium batteries mounts to a cover assembly within the transmitter to provide power to the transmitter. The expiration date of the batteries must be indicated on the outside of the ELT battery case and recorded in the aircraft logs.

The ELT Remote Switch and Control Panel Indicator (RCPI) is located below the circuit breakers on the circuit breaker panel. The RCPI provides test and monitoring functions for the transmitter. The panel contains a switch labeled ON-ARM, and a red LED indicator light. The ON switch is used to test the unit in accordance with the manufacturer's approved service instructions. The red LED indicator light flashes when the ELT is transmitting. Power to the LED is supplied by either the clock bus on the MCU (*Serials 1863 thru 2083*) or by a 6V lithium battery in the RCPI (*Serials 2084 & subs*).

A warning buzzer is mounted to the transmitter mounting tray. When the ELT is activated, the buzzer “beeps” periodically. This buzzer operates in tandem with the ELT panel indicator and would serve as a redundant indicator. Power to the buzzer is supplied by the ELT batteries.

After setting transmitter switch to ARM position, the ELT automatically enters a self-test mode. The self-test transmits a 406 MHz test coded pulse that monitors certain system functions before shutting off. The test pulse is ignored by any satellite that receives the signal, but the ELT uses this pulse to check output power and frequency. Other parameters of the ELT are checked and a set of error codes is generated if a problem is found. The error codes are indicated by a series of pulses on the transmitter LED, remote control panel indicator LED, and alert buzzer. One pulse indicates that the system is operational and no error conditions were found. For a list of error codes, see Troubleshooting. (Refer to 25-60)

WARNING: **ELT and RCPI batteries must be inspected in accordance with the requirements of the replacement schedule in Chapter 5. The ELT and RCPI batteries must be replaced upon reaching the date stamped on the batteries, after an inadvertent activation of unknown duration, or whenever the batteries have been in use for one cumulative hour.**

Refer to the manufacturer’s approved Instructions For Continued Airworthiness and/or other service instructions.

2. TROUBLESHOOTING

Serials 1863 & subs w/ Artex ME406 ELT:

Trouble	Probable Cause	Remedy
Self test indicates 3 flash error.	Open or shorted antenna cable.	Verify antenna cable is connected and in good condition. Perform continuity check of center conductor and shield. Check cable for shorts or intermittent connection.
	Faulty antenna.	Using a voltage standing wave ratio (VSWR) meter, check antenna for opens, shorts, or resistive ground plane connection.
Self test indicates 4 flash error.	Low power detected. Occurs if output power is below about 33 dBm (2 watts) for the 406 signal or 17 dBm (50 mW) for the 121.5 MHz signal.	Verify battery voltage. Replace battery if low voltage or if 7 Flash error is also present.
	406 signal is off frequency.	Verify 406 MHz frequency. If bad, the ELT must be sent back for repair or replacement.
Self test indicates 5 flash error.	ELT has not been programmed.	If possible, read ELT 406 MHz signal to verify programming.
Self test indicates 6 flash error.	G-switch jumper wire not installed between pins 5 and 12 of D-sub connector. ELT will not activate during a crash.	Verify less than 1 ohm of resistance between pins 5 and 12 of D-sub connector. If necessary, install G-switch jumper wire.
Self test indicates 7 flash error.	Accumulated operation time on battery has exceeded 1 hour.	Replace battery.
	Battery circuit damaged.	Inspect battery circuit.
Remote switch LED always illuminated.	Wiring error.	Verify wiring.
	Frayed wires shorting out pins on back of remote switch.	Verify integrity of all crimp or solder connections on harness.

3. MAINTENANCE PRACTICES

A. Emergency Locator Transmitter - *Serials 0002 & subs w/ ACK E-01 ELT* (See Figure 25-601)

(1) Removal - ELT

(a) Remove access panel CB06. (Refer to 06-00)

(b) Set transmitter control switch to OFF position.

(c) Disconnect remote control panel indicator cable from transmitter.

(d) Disconnect antenna cable from transmitter.

(e) Remove portable antenna from transmitter.

(f) Open quick release straps securing transmitter to mounting tray. Remove transmitter from airplane.

(2) Installation - ELT

WARNING: **ELT must be installed with printed arrow on battery case pointing in the direction of flight.**

(a) Position transmitter to mounting tray with printed arrow on battery case pointing in direction of flight.

Note: The quick release straps which secure the transmitter to the mounting tray are slightly different sizes. The strap which fits around front of transmitter is marked FRONT. The strap which fits around battery end of transmitter is marked BATTERY.

(b) Close quick release straps securing transmitter to mounting tray.

(c) Position portable antenna to transmitter and secure.

(d) Connect antenna cable to transmitter.

(e) Connect remote control panel indicator cable to transmitter.

(f) Perform Operational Test - ELT. (Refer to 25-60)

(g) Install access panel CB06. (Refer to 06-00)

(3) Operational Test - ELT

Note: Regulations require that transmitter tests only be done during the first 5 minutes of each hour and must not last for more than 3 audio sweeps (1.5 seconds). If you are at a location where there is an FAA control tower or other monitoring facility, notify the facility before beginning the tests. Never activate the ELT while airborne for any reason.

A low quality AM broadcast receiver should be used to determine if energy is being transmitted from the antenna. When the antenna of the radio (tuning dial on any setting) is held about 6 inches from the activated ELT antenna, the ELT aural tone will be heard on the AM broadcast receiver. This is not a measured check, but it does provide confidence that the antenna is radiating sufficient power to aid search and rescue. The aircraft's VHF receiver, tuned to 121.5 MHz, may also be used. This receiver, however, is more sensitive and could pick up a weak signal even if the radiating ELT's antenna is disconnected. Thus it does not check the integrity of the ELT system or provide the same level of confidence as does an AM radio.

(a) Remove access panel CB06. (Refer to 06-00)

(b) Monitor 121.5 Mhz using aircraft COM receiver or portable hand-held receiver.

(c) Turn receiver squelch control all the way down or to OFF position.

(d) Set transmitter control switch to ON position.
(e) Verify audio sweep tone can be heard on COM receiver.
(f) Set transmitter control switch to ARMED position.
(g) Press ON button on remote control panel indicator.
(h) Verify LED flashes and is readily visible from pilots operating position.
(i) Verify audio sweep tone can be heard on COM receiver.
(j) Push RESET button on remote control panel indicator.
(k) Verify LED stops flashing and audio sweep tone stops transmitting.
(l) Install access panel CB06. (Refer to 06-00)

(4) Inspection/Check - ELT

Note: Perform Inspection/Check in accordance with 14 CFR 91.207.

(a) Remove ELT. (Refer to 25-60)
(b) Visually inspect mounting tray, fasteners, and mechanical assemblies for security.
(c) Visually inspect antenna cable and RCPI cable for cuts, abrasions, or signs of wear.
(d) Visually inspect all cable connectors and mating plugs for signs of corrosion.

Note: Pay special attention to antenna cable center conductor pins which are prone to retracting into connector housing.

(e) Visually inspect and confirm proper seating of all connector pins.
(f) Check transmitter batteries for expiration date and corrosion. Replace if necessary. (Refer to 25-60)
(g) Check RCPI battery for expiration date and corrosion. Replace if necessary. (Refer to 25-60)
(h) Verify operation of G-switch.

Note: Regulations require that transmitter tests only be done during the first 5 minutes of each hour and must not last for more than 3 audio sweeps (1.5 seconds). If you are at a location where there is an FAA control tower or other monitoring facility, notify the facility before beginning the tests.

1 Set transmitter control switch to ARMED position.
2 Hold transmitter with printed arrow on battery case pointing forward.
3 Activate ELT with a rapid forward throwing motion coupled by a rapid reversing motion.
4 Verify transmitter activation by monitoring 121.5 Mhz with aircraft COM receiver or portable hand-held receiver.
5 Set transmitter control switch to OFF position.

(i) Install ELT. (Refer to 25-60)

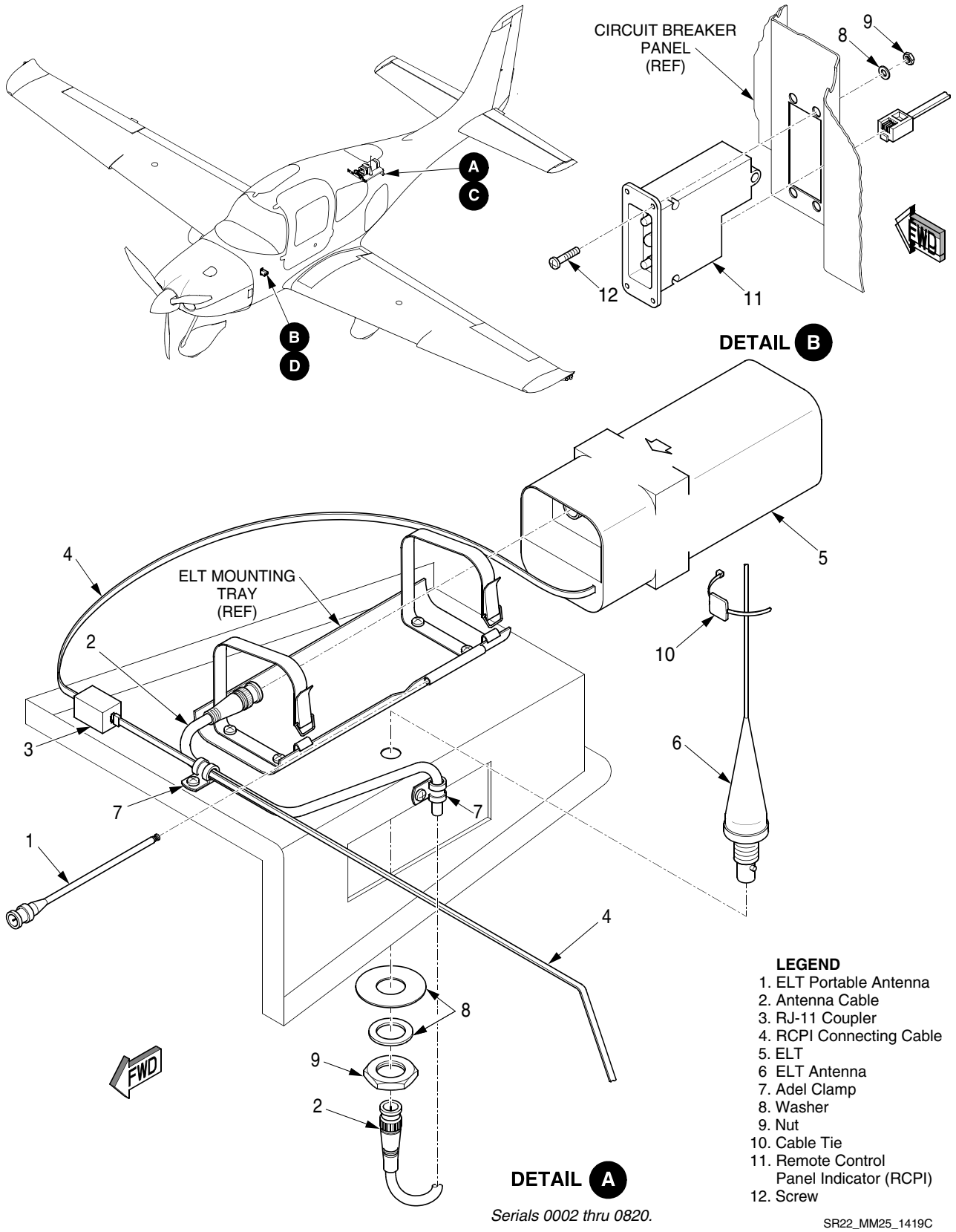

Figure 25-601
ELT Installation - *Serials 0002 thru 0820* (Sheet 1 of 2)

EFFECTIVITY:
Serials 0002 thru 0820

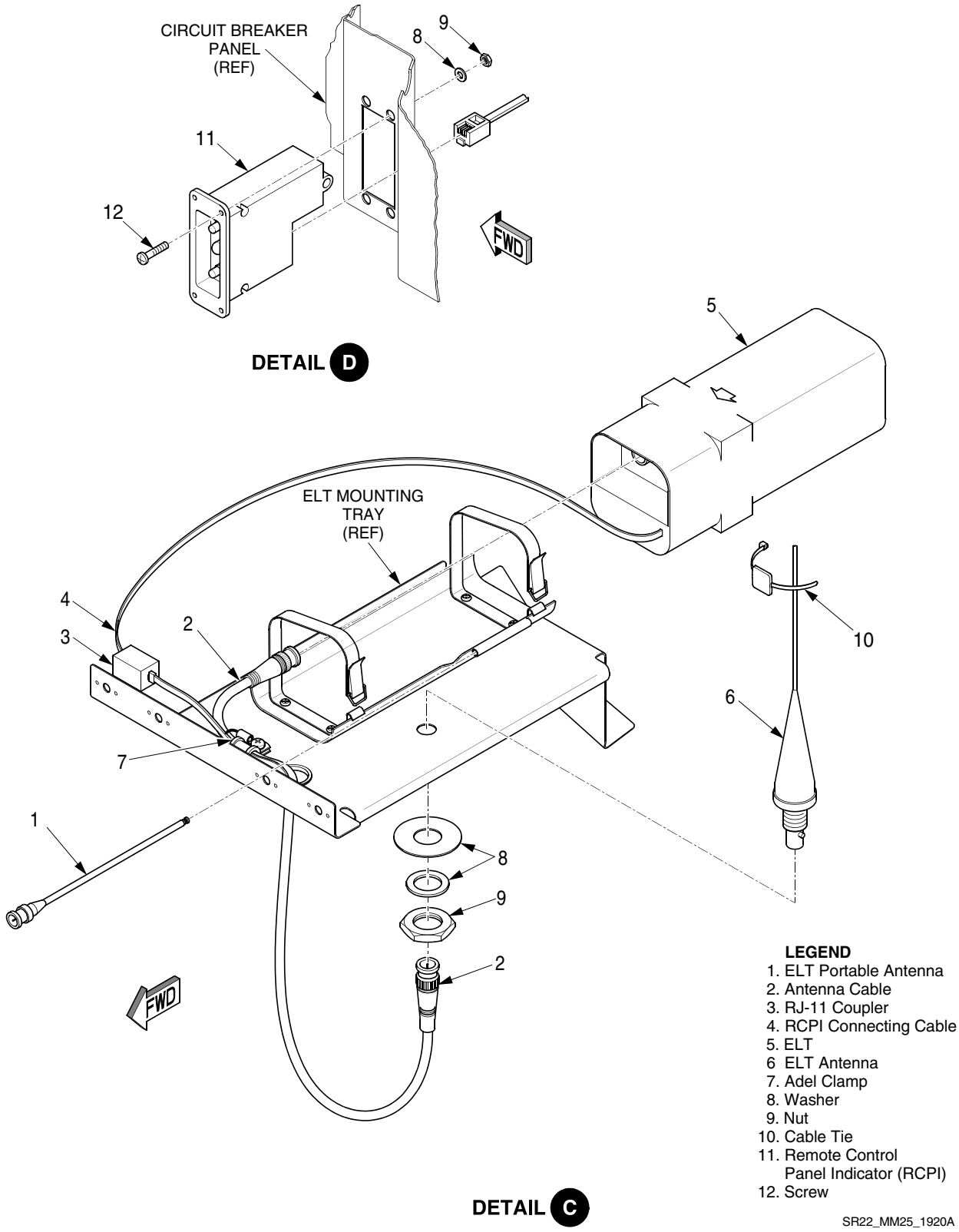

Figure 25-601
ELT Installation - *Serials 0821 & subs w/ ACK E-01 ELT* (Sheet 2 of 2)

B. Emergency Locator Transmitter - *Serials 1863 & subs w/ Artex ME406 ELT* (See Figure 25-602)

(1) Removal - ELT

(a) Remove access panel CB06. (Refer to 06-00)

(b) Disconnect remote control panel indicator cable from transmitter.

(c) Disconnect antenna cable from transmitter.

(d) Loosen strap securing transmitter to mounting tray. Remove transmitter from airplane.

(2) Installation - ELT

(a) Position transmitter to mounting tray and secure with strap.

(b) Connect antenna cable to transmitter.

(c) Connect remote control panel indicator cable to transmitter.

(d) Perform Operational Test - ELT. (Refer to 25-60)

(e) Install access panel CB06. (Refer to 06-00)

(3) Operational Test - ELT

Note: Regulations require that transmitter tests only be done during the first 5 minutes of each hour and must not last for more than 3 audio sweeps (1.5 seconds). If you are at a location where there is an FAA control tower or other monitoring facility, notify the facility before beginning the tests. Never activate the ELT while airborne for any reason.

A low quality AM broadcast receiver should be used to determine if energy is being transmitted from the antenna. When the antenna of the radio (tuning dial on any setting) is held about 6 inches from the activated ELT antenna, the ELT aural tone will be heard on the AM broadcast receiver. This is not a measured check, but it does provide confidence that the antenna is radiating sufficient power to aid search and rescue. The aircraft's VHF receiver, tuned to 121.5 MHz, may also be used. This receiver, however, is more sensitive and could pick up a weak signal even if the radiating ELT's antenna is disconnected. Thus it does not check the integrity of the ELT system or provide the same level of confidence as does an AM radio.

(a) Remove access panel CB06. (Refer to 06-00)

(b) Monitor 121.5 Mhz using aircraft COM receiver or portable hand-held receiver.

(c) Turn receiver squelch control all the way down or to OFF position.

(d) Set transmitter control switch to ON position.

(e) Verify audio sweep tone can be heard on COM receiver.

(f) Verify audio tone can be heard from buzzer.

(g) Set transmitter control switch to ARMED position.

(h) Set remote control panel indicator switch to ON position.

(i) Verify LED flashes and is readily visible from pilots operating position.

(j) Verify audio sweep tone can be heard on COM receiver.

(k) Verify audio tone can be heard from buzzer.

(l) Set remote control panel indicator switch to ARM position.

(m) Verify LED and buzzer pulse once and audio sweep tone stops transmitting. If LED and buzzer pulse more than once, refer to Troubleshooting. (Refer to 25-60)

(n) Install access panel CB06. (Refer to 06-00)

(4) Inspection/Check - ELT

Note: Perform Inspection/Check in accordance with 14 CFR 91.207.

(a) Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
Shorting Plug Connector	150-1130	Artex Aircraft Supplies Canby, Oregon 97013 800-547-8901	Enables G-switch activation.
ELT Test Set	453-1000	Artex Aircraft Supplies Canby, Oregon 97013 800-547-8901	Test 406 MHz digital message.

(b) Remove ELT. (Refer to 25-60)

(c) Visually inspect mounting tray, fasteners, and hardware for cracks and security.

(d) Visually inspect antenna cable and RCPI cable for cuts, abrasions, or signs of wear.

(e) Visually inspect all cable connectors and mating plugs for signs of corrosion.

Note: Pay special attention to antenna cable center conductor pins which are prone to retracting into connector housing.

(f) Visually inspect and confirm proper seating of all connector pins.

(g) Check transmitter batteries for expiration date and corrosion. Replace if necessary. (Refer to 25-60)

(h) Verify operation of G-switch.

Note: Regulations require that transmitter tests only be done during the first 5 minutes of each hour and must not last for more than 3 audio sweeps (1.5 seconds). If you are at a location where there is an FAA control tower or other monitoring facility, notify the facility before beginning the tests.

G-switch activation requires pins 5 and 12 of the D-sub connector to be connected (shorted) together. A shorting plug connector must be used to verify operation of G-switch.

1 Connect shorting plug connector to transmitter.

2 Set transmitter control switch to ARM position.

3 Hold transmitter with printed arrow on battery case pointing forward.

4 Activate ELT with a rapid forward throwing motion coupled by a rapid reversing motion.

5 Verify ELT activation by observing transmitter LED and by monitoring 121.5 Mhz with aircraft COM receiver or portable hand-held receiver.

6 Reset ELT by setting transmitter control switch to ON position, then to ARM position.

(i) Install ELT. (Refer to 25-60)

Note: Digital message verification is not mandatory per 14 CFR 91.207 but is highly recommended.

(j) Verify 406 MHz digital message.

1 Disconnect antenna cable from transmitter.

2 Connect ELT test set to transmitter.

3 Power up test set per manufacturer's operating instructions.

4 Set transmitter control switch to ON position, then to ARM position.

5 After test set receives digital message from transmitter, verify information is correct for country code, aircraft Identification, etc.

6 Verify 15 digit transmitter identification number matches number shown on transmitter product label.

7 Power down test set per manufacturer's operating instructions.

8 Disconnect test set from transmitter.

9 Connect antenna cable to transmitter.

C. ELT Battery

Refer to the manufacturer's approved Instructions For Continued Airworthiness and/or other service instructions.

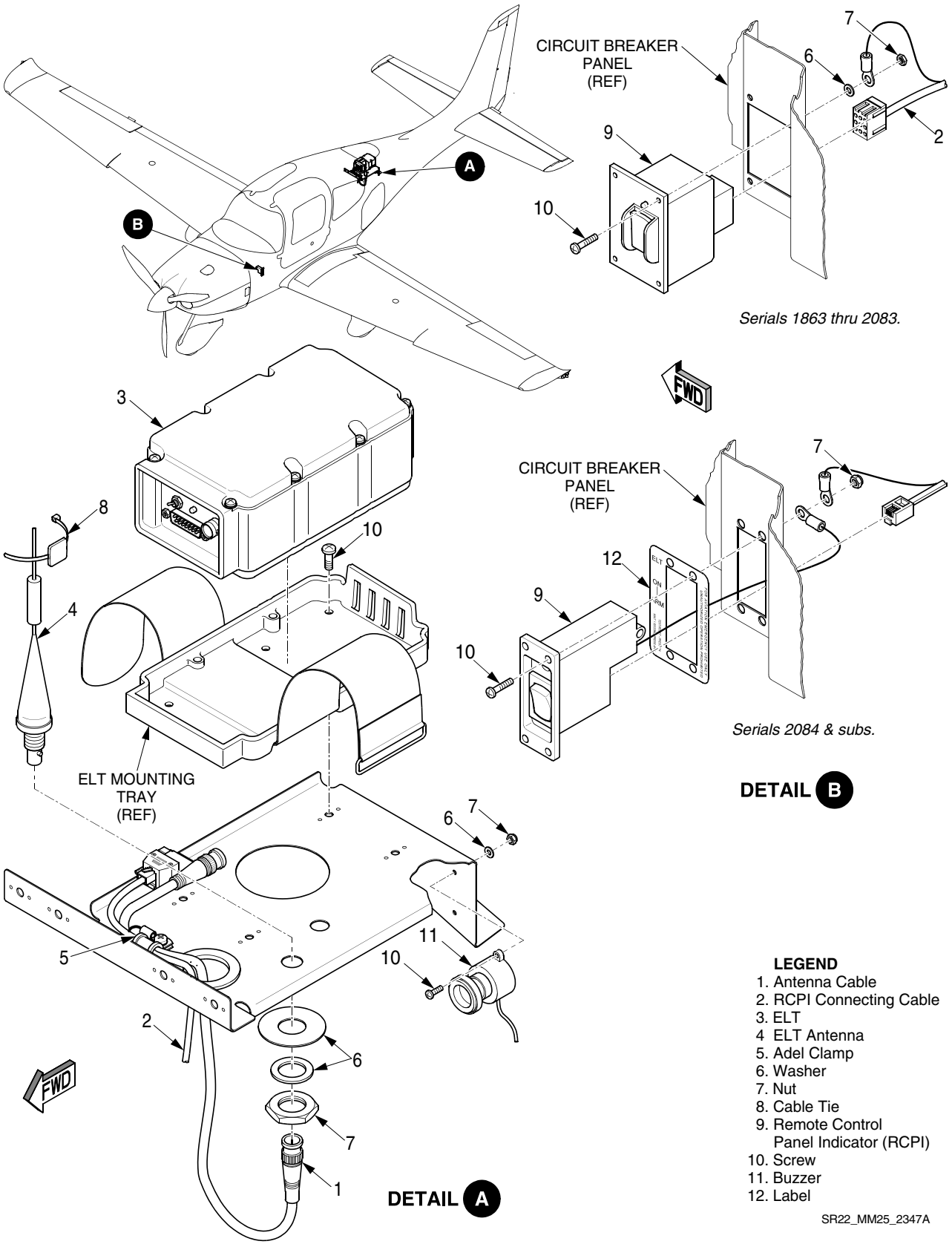

Figure 25-602
ELT Installation - *Serials 1863 & subs w/ Artex ME406 ELT*

EFFECTIVITY:
Serials 1863 & subs w/ Artex ME406 ELT

D. Remote Control Panel Indicator (RCPI) - *Serials 0002 & subs w/ ACK E-01 ELT* (See Figure 25-601)

(1) Removal - Remote Control Panel Indicator

(a) Remove aft screws securing circuit breaker panel to console. Open circuit breaker panel.

(b) Disconnect transmitter cable from RCPI.

(c) Remove screws, washers, and nuts securing RCPI to circuit breaker panel. Remove RCPI from airplane.

(2) Installation - Remote Control Panel Indicator

(a) Position RCPI to circuit breaker panel and secure with screws, washers, and nuts.

(b) Connect transmitter cable to RCPI.

(c) Perform Operational Test - ELT. (Refer to 25-60)

(d) Position circuit breaker panel to console and secure with screws.

E. Remote Control Panel Indicator (RCPI) - *Serials 1863 & subs w/ Artex ME406 ELT* (See Figure 25-602)

(1) Removal - Remote Control Panel Indicator

(a) Remove aft screws securing circuit breaker panel to console. Open circuit breaker panel.

(b) Remove cable tie securing RCPI ground wire to RCPI connecting cable.

(c) Disconnect transmitter cable from RCPI.

(d) *Serials 1863 thru 2083:* Remove screws, washers, and nuts securing RCPI to circuit breaker panel. Remove RCPI from airplane.

(e) *Serials 2084 & subs:* Remove screws and nuts securing RCPI to circuit breaker panel. Remove RCPI from airplane.

(2) Installation - Remote Control Panel Indicator

(a) *Serials 1863 thru 2083:* Position RCPI to circuit breaker panel and secure with screws, washers, and nuts.

(b) *Serials 2084 & subs:* Position RCPI to circuit breaker panel and secure with screws and nuts.

(c) Connect transmitter cable to RCPI.

(d) Perform Operational Test - ELT. (Refer to 25-60)

(e) Position circuit breaker panel to console and secure with screws.

F. Remote Control Panel Indicator (RCPI) Battery - *Serials 0002 & subs w/ ACK E-01 ELT*

(1) Removal - Remote Control Panel Indicator Battery

(a) Remove RCPI. (Refer to 25-60)

(b) Remove screws securing upper and lower half of RCPI.

(c) Loosen nuts securing switches to RCPI.

(d) Remove top half of RCPI to access battery compartment.

(e) Remove battery from RCPI.

(2) Installation - Remote Control Panel Indicator Battery

(a) Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
6-Volt Battery	Duracell PX28L or Kodak K28L	Any Source	Provide power to RCPI.

(b) Visually inspect battery contacts for dirt or corrosion. If necessary, clean contacts with nonabrasive electrical contact cleaner and a stiff brush.

(c) Insert battery with polarity as shown on bottom of battery compartment.

(d) Position top half of RCPI to bottom half and secure with screws.

(e) Tighten nuts securing switches to RCPI.

(f) Record next battery replacement date on one of the adhesive labels supplied with the ELT. Affix label to ELT in a readily visible location when installed. Record battery replacement date in logbook.

(g) Install RCPI. (Refer to 25-60)

G. Remote Control Panel Indicator (RCPI) Battery - *Serials 2084 & subs w/ Artex ME406 ELT*

(1) Removal - Remote Control Panel Indicator Battery

(a) Remove RCPI. (Refer to 25-60)

(b) Remove screws securing upper and lower half of RCPI.

(c) Loosen nuts securing switch to RCPI.

(d) Remove top half of RCPI to access battery compartment.

(e) Remove battery from RCPI.

(2) Installation - Remote Control Panel Indicator Battery

(a) Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
6-Volt Battery	131-0001	Artex Aircraft Supplies Canby, Oregon 97013 800-547-8901	Provide power to RCPI.

(b) Visually inspect battery contacts for dirt or corrosion. If necessary, clean contacts with nonabrasive electrical contact cleaner and a stiff brush.

(c) Insert battery with polarity as shown on bottom of battery compartment.

(d) Position top half of RCPI to bottom half and secure with screws.

(e) Tighten nuts securing switches to RCPI.

(f) Record next battery replacement date on one of the adhesive labels supplied with the ELT. Affix label to ELT in a readily visible location when installed. Record battery replacement date in logbook.

(g) Install RCPI. (Refer to 25-60)

H. ELT Antenna (See Figure 25-601), (See Figure 25-602)

(1) Removal - ELT Antenna

(a) Remove access panel CB06. (Refer to 06-00)

(b) Disconnect antenna cable from antenna.

(c) Remove cable tie securing antenna tip to fuselage.

(d) Remove nut and washers securing antenna base to mounting tray. Remove antenna from airplane.

(2) Installation - ELT Antenna

(a) Position antenna base to mounting tray and secure with washers and nut.

(b) Position antenna tip to fuselage and secure with cable tie.

(c) Connect antenna cable to antenna.

(d) *Serials 0002 & subs w/ ACK E-01 ELT:* Perform Operational Test - ELT. (Refer to 25-60)

(e) *Serials 1863 & subs w/ Artex ME406 ELT:* Perform Operational Test - ELT. (Refer to 25-60)

(f) Install access panel CB06. (Refer to 06-00)